

**Provision of Executive Information System for
Indiana Department of Correction
Can Improve Agency's Ability to Meet
Mission and Objectives**

A Report Prepared for the
Indiana Department of Correction Information Management Services by
Justice Information Associates,
Boulder, Colorado

January 23, 1992

Funding Provided by U.S. Department of Justice, National Institute of Corrections
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EXECUTIVE SUMMARY

1. What is an Executive Information System (EIS) for the Indiana Department of Correction?

The EIS for the Indiana Department of Correction will be a computer-based tool that will support routine decision making and proactive planning by the Commissioner, the Executive Staff, Division Directors and Superintendents. The EIS will provide immediate answers to executive queries in a format useful to that executive. Additionally the EIS envisioned will support instant communication within the Department in a visually effective manner. Information will be transferred both graphically and textually. The EIS will be an on-line system that helps IDOC top management reinforce the mission, goals and priorities of the Department.

2. How much will this EIS cost the Department?

The software needed for operation on a mainframe platform will cost up to \$250,000, including implementation. Federal funding will be sought to provide consultant assistance during installation and implementation. Additional costs will be incurred to upgrade executive work stations. This cost is estimated at \$150,000., including upgrading work stations within institutions. Maintenance is anticipated to cost \$20,000 per year, a figure that includes free product upgrades and technical support from the vendor. Two staff will be dedicated to the EIS project and cost approximately \$70,000 per year.

3. Is this EIS worth the investment?

The EIS should provide both tangible and intangible benefits. The intangible benefits include enhancing the Commissioner's control over the agency and his understanding of how the organization is performing. Ultimately, the EIS will allow the Commissioner, the Executive Staff, the Deputy Directors and the Superintendents to forecast work load, to budget accordingly and to evaluate the Department's attainment of critical goals and objectives.

Tangible results include proactive planning capabilities to eliminate crowding, reduce institutional violence, improve classification decisions, lower staff turnover and improve public perspectives of security. The data being managed by the EIS is that identified as critical to understanding how well the Department is meeting its objectives.

4. What hardware does the Department need?

These costs will be minimal because the EIS will use the existing IBM mainframe computer. Using the existing processor is (a) faster than other alternatives, the computer and its infrastructure are already in place; (b) it reduces the visibility of the project where competition for scarce funds is intense; and (c) it avoids turf problems by reinforcing the equipment purchasing decisions made earlier.

Enhancing work stations will require resources but this process is an on-going one. Whether an EIS is implemented or not, all existing work stations are scheduled for replacement on an as needed basis. This is really not a cost that can be distinctly tied to EIS implementation.

5. What software does the Department need?

The EIS software products reviewed in this feasibility study provide (a) push button (mouse) delivery, (b) modelling and reporting, (c) data graphing, (d) a fourth generation database function,

and, (e) electronic mail (E-Mail). The product selected will also allow Department researchers to up and down load the EIS data base to other statistical analysis software already in place. Additionally, the product selected will be able to access virtually all of the existing data base packages used in the Department such as Paradox, Lotus and the Offender Information System (OIS).

6. What will this EIS do for the Department?

The EIS planned will deliver daily, monthly, quarterly and annual Departmental information in a useful and visually effective format. On one hand the system will deliver information "on-line", directly to the desks of top Department executives. Additionally, the system will deliver paper products and output.

Existing reports can be loaded into the EIS data base and be made part of all EIS reports. Links to the E-Mail system will allow users to note exceptions and write memos to the appropriate division or institution. Some products can access external data bases and search periodicals for news pertinent to corrections.

7. What staff does the Department need?

The EIS project will need a sponsor, in this case the continued direction from the Commissioner. The EIS Study Committee established during the feasibility phase should be expanded to an Implementation Committee to act as the Driver for the project. The Division of Information Management Services (IMS) of the Department of Correction and the Planning Division will act as the joint Directors of the Project both during installation and later during on-going operation. A staff person at the Planning Division is needed to care for the data and evaluate the usefulness of the information going in and coming out of the EIS. Finally, a technical staff person is needed at IMS to adjust the data base, customize templates and screens, improve telecommunications and respond to technical questions.

1. INTRODUCTION

1.1 Rationale for Project

This project is but one task identified succinctly in the **IMS Long Range Plan for completing the** automation of the Indiana Department of Correction. It shares priority with the tasks of developing a financial reporting system, expanding and integrating the existing human resource data base into **Department** operations, amending the OIS data base to include additional user needs (such as substance abuse history) and the development and implementation of a comprehensive information system for all aspects of Department Juvenile Services.

These priorities exist symbiotically and can be accomplished simultaneously. Indeed, the proto-typing of an EIS will take into account the fact that these other incomplete projects will need to contribute to the EIS data base. The study committee recognized that gaps exist in the totality of information needed for a complete EIS. It is clear, however, that sufficient information exists in the OIS data base to create a very useful EIS product. Additionally, the EIS products reviewed can span computing platforms (micro to mainframe) as well as provide a mechanism for editing hand tallied information elements into the EIS data base.

The ultimate rationale for the creation of an EIS for the Department is the Commissioners need to (1) forecast future work loads within institutions and divisions, (2) affix per unit costs to future activity to prepare a budget for the coming biennium, and (3) to evaluate the Department's progress toward meeting its objectives and mission. These are worthy goals and quite attainable through the use of an EIS.

1.2 Implementation Objective

To develop a Department-wide executive information system by the end of 1992 that allows the Department to:

- a. Forecast future work loads in all Divisions and Institutions and allow the Department to meet all Department goals and objectives.
- b. Accurately budget for anticipated work loads and to more effectively utilize Departmental fiscal resources.
- c. Evaluate the efficiency and effectiveness of Department programs and policies.

1.3 Development and Implementation

Basic Executive Information Systems attempt to address the same goal that the reporting arms of Management Information System shops have had for decades: to provide the most timely and accurate information possible to top management. For years management has wondered why Information Services has not been able to provide information faster since it's all supposed to be available "at the push of a button." Now EIS promises just this -timely and accurate information

with a minimal amount of user effort (though a significant amount of “behind the scenes” staff work).

Successful implementation of any EIS involves codifying the data knowledge of the reporting staff. For a given EIS site, the extent to which data problems (ie. inaccuracy, unavailability, intricacy) have slowed down traditional reporting will determine the difficulty of the EIS **development phase**.

1.4 Hardware Considerations

When the EIS system comes on line, an EIS user pushes a button on their mouse and expects to see data driven answers immediately. The performance of a poorly designed EIS can quickly nose dive into response times measured in minutes. A two minute run time on a batch reporting program is fine. A two minute response time on a mouse click usually is not. Note that an EIS is additionally burdened with a GUI (graphical user interface). A batch program is not. For this reason good EIS systems require lots of RAM (random access memory), disk space, and CPU (central processing unit) power. All of the products reviewed to arrive at a product recommendation require graphical color monitors (VGA or better preferred on Personal Computers). Not materially different from those monitors already in use by targeted staff.

1.5 Software System Design: Client/Server

Beyond basic hardware, however, is the client/server solution. This allows the client machine to deal with the GUI (the presentation layer) while the server handles data manipulation. The client machines are Personal Computers. The server can be either a mainframe, a mini, or a Local Area Network (LAN). In the client/server model the server is more than just a file server. With a file server, the work station still has to do all the data manipulation, selection and summarization. The file server just allows shared access to the database. The client server approach involves an intelligent server such as Netware SQL (structured query language). A client machine can send an SQL server a SELECT request (SQL SELECT statement). An SQL SELECT can call for extensive manipulation of data in several tables and always returns an “answer table.” The client work station can then take the table and make it look good, for example, by rendering it as a bar graph. With this approach telecommunications demands are decreased and the speed of execution depends more on the server. Only the industry standard, ASCII SQL request goes out and only the desired answer comes back. All intermediate processing is handled by the SQL server. With a file server approach much more processing happens “on the wire” and the speed of execution depends more on the work station.

The client/server approach lets you invest in one premium machine for the server, and less expensive machines for the clients while still achieving an acceptable response time. Performance will decrease if there are too many users, but the same is true for a file server.

The client/server solution is the wave of the EIS future. Even remote sites can access push button reporting without “falling asleep.”

1.6 Software System Design: Pre-Analysis

Pre-analysis (ie. “canned reports”) can go a long way towards decreasing response time. With pre-analysis, the “answer table” is stored and ready to go, thus reducing data_manipulation_time to merely data_reading_time in the response time equation

$$\text{Response Time} = \text{Data Manipulation Time} + \text{Telecommunications Time} + \text{Rendering Time}$$

Pre-analysis is a “fact of EIS life” in today’s systems and can cause seemingly inconsistent response times depending on whether a pre-defined answer table can be used to respond to a query or not.

For the Executive Information System being developed for the Indiana Department of Correction, the Annual, Quarterly and Monthly reports can be pre-analyzed. Probably the Daily report as well, depending on the final design of the system.

2. Research Methods

2.1. The “Committee”

The methods used to develop the feasibility of an executive information system were based upon the creation of a project oversight committee (the Executive Information System Study Committee). This committee, whose membership is listed in the appendix, directed the research effort, reviewed all findings and rendered decisions on virtually all dimensions of the effort. The Committee selected business problems, extracted data elements for the reports, selected the frequency of all proposed reports, reviewed the products available though they deferred selecting the best configuration for eventual implementation within the Department due to the rapidly changing field of potential vendors and the expanding capabilities of their products.

2.2 Qualitative Research

The Consultants formally interviewed 36 decision makers within the Department. Those interviewed included the Commissioner, all of the Deputy Commissioners, select Superintendents, Information Management Services and Information Services Division staff, responsible for data aggregation and reporting and institution personnel responsible for initiating and editing inmate files into the Offender Information System.

These structured interviews were facilitated by the use of data collection forms which are provided in the appendix. These forms were used to determine input and output gaps and to describe existing management systems and reporting responsibilities.

2.3 Force Field Analysis

The Executive Information System Study Committee (the Committee) conducted a force field analysis to determine those facilitating factors and impediments to the successful implementation of a Department wide Executive Information System (EIS). The Committee was asked to list forces that would contribute to the eventual completion of the project. Additionally factors were listed that the Committee thought might detract from the department's ability to implement an EIS. A summary graph of these results follows this discussion.

2.3.1 Facilitating Factors

- ✓ Departmental Enthusiasm.
- ✓ Facility/Peer Competition.
- ✓ Managerial Support.
- ✓ Equipment.
- ✓ Image.
- ✓ OIS.
- ✓ Staff Knowledge.
- ✓ Accountability.
- ✓ Reallocated resources.

2.3.2 Opposing Factors

The Committee described those factors that may slow implementation. The intent is to remove these factors rather than to weight the facilitating factors.

- ✓ Technology Resistance.
- ✓ Threatened by Good Data.
- ✓ Funding.
- ✓ Job Loss.
- ✓ Low Technical Experience.
- ✓ Gaps in Existing Automation.
- ✓ Bureaucracy.
- ✓ Turf.

2.4 Product Criteria and Evaluations

The field of products available is continually evolving. The number of firms expands and contracts annually. The characteristics of the products seem to become more refined as the number of corporate users increases.

If the following criteria are strictly adhered to in reviewing products, the Department should have a difficult time selecting a distinctive software package but the decision is certain to be the correct one. It is advised that training and consultant support from the vendor, along with known use elsewhere (applications) be emphasized when products are reviewed and a selection made. These categories should be part of the Request for Information (RFI) or Broad Area Announcement (BAA) to be circulated by the EIS Committee to potential vendors.

Each potential vendor should be carefully evaluated according to the following criteria. Provision of the criteria to the vendor as part of the RFI or BAA will allow the vendor to precisely describe their product's ability to meet established operating parameters. It may be useful for IMS to create a temporary demonstration extract file from OIS (all identifiers removed except facility) and provide this file to vendors for to allow them to provide demonstrations of how the actual data can be analyzed and presented. The task of OIS extract file development needs to be tested at the IMS end and this could be a good time for this.

1. **Product cost.** Expensive for the mainframe platform, significantly less so for LANS. The Department should be prepared to spend up to \$250,000 for a mainframe product.
2. **Cost to upgrade existing hardware.** Work stations need to be upgraded irrespective of the product selected. LAN based packages require a significant upgrade of the Central Office LAN. For the Department 386 or 486 processors operating at 25 mega hertz with 6 mega bytes of RAM are required. Expect to spend close to \$3,000 per work station for new work stations (also see Hardware Considerations in Introduction).
3. **Cost to upgrade existing software.** Little impact for any product. Watch for the ability to access existing data bases, tie into the existing E-Mail system and operate under 'Windows'. Most EIS packages come with varying "modules"

that can be purchased dependant upon the types of utilities already available at the site.

4. **Staffing requirements.** The IDOC can afford two staff and probably no more. Two will be minimal staffing. One should be a research statistician with good computer skills located in the Planning Division who would “manage” the data going into the EIS data base . The other a technical person located at IMS who would be able to assist in a multi platform environment.
5. **Ease of use by top executives.** Utterly “transparent” or “seamless” for the end user means that they have to have minimal data processing skills to use the product. Such a situation will usually require significant behind the scenes, pm-analysis by EIS staff.
6. **Technical support including toll free help lines.** No toll free numbers were found and all technical support agreements should be in writing.
7. **Statistical and data analysis capabilities.** Look for the usual measures of dispersion and central tendency. Descriptive and inferential statistics are required. Users will need averages, modes, percent changes, sums, etc..
8. **Mouse/GUI interface.** Either as part of the product or products with a feature that takes advantage of Microsoft’s ‘Windows’. Keyboards needed by users only for logging on and sending E-Mail memos when exceptions are found while reviewing report output. Huge memory requirements (46 megabytes) require attention to work station upgrades.
9. **Ability to query data bases: static and live.** Useful for research staff to respond to “ad hoc” reports. Every user especially the Planning Division staff must have access to SQL. Moving files between software (such as PC SAS, LOTUS 1-2-3 and Paradox) and platforms (mainframe to LAN to personal computers) is essential.
10. **Ability to summarize data. Same as 7. above. All of** the data reported will be synoptic measures of Departmental activity. The EIS product will not examine individual inmate data but rather aggregate inmate data on the facility level.
11. **Pre-coded routines to produce analysis/query.** The users requirements are so well known that the reports obviate most “ad hoc” situations. Because of this the Department will need to work out a distribution network to provide “significant other” users (the Governor, the Legislature, etc.) with verified EIS reports.
12. **Flexibility for users to conduct query. See 9. above.** If an appropriate user needs to access individual inmate records or to alter time frames for analysis the product should provide this capability.

13. **Multi platform.** Mainframe to LAN to PC to paper and back again. All sources of data available for analysis. Most processing will be done on the mainframe with graphical representation on the individual work stations.
14. **Textual and graphics results.** The user can select the mode. Most often both are presented.
15. **Hierarchical layering of detail.** Based upon the institution or division. Starts with comparative data and allows user to “drill down” to more specific institution/division characteristics for reporting period.
16. **Security.** No unauthorized use of reports or tampering with data base. Does allow authorized down loads by research staff department-wide of aggregated EIS data base.
17. **Vendor reputation and financial background.** Number of years company has been in existence, financial and staff assets, technical assistance staffing, and the likelihood of future products upgrades.
18. **Life cycle of product and number of other users.** Actual applications may speak well for selecting a product. Special emphasis should be placed on products operating successfully in corrections settings.
19. **Availability and costs of training.** These resources should be bundled with software. The Committee should seek a vendor who can bring the product training to Indianapolis instead of having to move EIS staff to some other vendor location.
20. **Bundled versus un-bundled.** None are bundled except with other modules of their own invention. The Committee should seek products that can take advantage of MVS/TSO utilities already available within ISD to help reduce implementation costs.
21. **Licensing requirements and the availability of a state wide site license.** All products require maintenance agreements. Expeditious and yet orderly adding of expanded number of users is required.
22. **Company policy for maintenance and upgrades.** Most are free with the signing of a maintenance agreement. Individual agreements should be carefully negotiated and reviewed by Legal Affairs.
23. **Warranty.** No such thing. But close supervision of installation, training and maintenance agreement could be substituted.
24. **On line help screens and similar capabilities.** Another essential for “seamless” end use by top management.

25. The availability of local support. At least midwestern offices for rapid deployment of technical staff and training.

2.5 Existing System Interviews

Interviews were conducted with representatives and staff of about twenty public and corporate agencies to discuss their perspective of the products that they are currently using or had used in the past. These interviews sought out corrections agencies foremost, criminal justice agencies secondarily and other corporate users finally. There are very few planned corrections models in existence today in the United States.

2.6 Product Reviews and Evaluations

A numerical summary of these products is contained in the Appendix. Some 12 different products were originally reviewed according to the above referenced criteria. During the time frame of the product review several of the products were purchased by competitors. Relational data bases used by certain firms as part of an EIS system developed by "in-house" staff are not reported on here as the potential for developing such a solution in Indiana was thought to be minimal due to staffing constraints.

3. ASSUMPTIONS AND FINDINGS

3.1 Overview of Feasibility

It is not only feasible to develop an Executive Information System within the Department it is also highly desirable. It is essential that this task be accomplished expeditiously. Sufficient data currently is available in the Department to allow the Commissioner to forecast future workloads, budget according to these forecasts and to evaluate the efficiency and effectiveness of Department activity.

The development of an EIS should share as high a priority as the development of a automated financial reporting system, the expanded use of the existing human resource management system, the automation of all juvenile facilities and the standardization of other PC-based local area network Paradox files. All of these projects can be completed simultaneously (especially if funding were made available). The EIS product selected must be flexible enough to adapt to an expanded database that encompasses as yet un-integrated division functions. Editing data from these uncompleted projects into the EIS data base is not easily accomplished by most of the EIS products reviewed but with the proper directive from the Commissioners Office the task can be accomplished. It currently happens in an "as needed" basis. The completion of the EIS project may actually act as a catalyst to the completion of the other automation projects identified.

3.2 Alternative Configurations

There are a number of paths the Department could follow to develop an EIS. They are briefly presented below with the strong and weak points of each illuminated.

(a) Continue present reporting and information exchange levels.

Consultant help will be needed to organize existing reports for distribution. No need to buy hardware though there would be a new emphasis on IMS completing projects to fill in existing gaps in departmental automated data bases. Will need statistical analysis and graphics software such as SAS or SPSS. Software needed to create transparent up/download capability is currently missing. Presently, the data exchange system responds in an inconsistent and untimely fashion to the Commissioners, the Executive Staff's, legislative and other third party requests for Department information; it is characterized by management **as** not only untimely but also frequently inaccurate. This existing network does not provide Executive Staff and the Commissioner with an ability to pro-actively plan for future activity. Little of the activity to routinely distribute information within the Department is coordinated, though the development of a strategic planning function is helping change this shortcoming. There is no graphical capabilities and a modest ability to assess trends in work loads or daily activity. The shortfalls of the present data exchange system has acted as catalyst for EIS feasibility. What is occurring in Indiana represents what virtually all other Departments of Corrections and large jails are doing in the United States today. The staffing with proper technical expertise to patch a system together with existing hard and software resources are not available within Department. If SAS (the Statistical Analysis System) were available on the LAN and if potential EIS staff could be trained on the use of it and

the existing mainframe SAS version, an in-house EIS product could be developed that would be a powerful analytical tool though not very "transparent" for users and certainly less graphical than the commercially available products.

(b) Personal Computer Local Area Network based EIS.

This option requires that a software package be purchased for the Department, though it is the least expensive of the software packages reviewed. This option requires dedicated EIS staff of the same size as the other models. The Central Office LAN will require major upgrades in central processor speed, storage and memory. Without such upgrades the present use of the LAN for word processing and data base and spreadsheet applications would be severely slowed by the introduction of an EIS product. Software needed to create gateway to IBM 3090 and OIS would also be required. Software needed to effect transparent up/download capability does not currently exist. There is a need to upgrade individual work stations as in all configuration. This option could not provide reports to Superintendents at institutions and work release sites nor to parole offices. This option would provide limited communication between the Central Office and the various facilities and offices in the field. Significant consultant help would be needed at implementation and for user training. Currently there is a modest group of existing applications and few packages to select from. This research found one product of merit.

(c) Mainframe data base development and computing with LAN distribution of reports.

Work station and LAN upgrades would be required as in all models. Same level of staffing as above. EIS software package needed. Additional software for up/downloads needed. Technical telecommunications problems with moving reports back to mainframe for distribution to field. Slow processing times expected on LAN and individual work stations. Significant consultant help required. Few products to choose from though good precedents for this type of configuration. No cost savings over following model and the slower data processing time expected enhances the value of the following option.

(d) Mainframe data base and report distribution.

This configuration will require a software package and upgrades of work stations both in Central Office and Institutions. The work stations provide the graphical interface in a "Windows" like environment. At least two EIS staff will be needed for on-going implementation. Mainframe is presently under-utilized by corrections. Per unit CPU costs are apparently low. No hardware upgrades needed for this computing platform. Direct access to OIS data base, where 75% of the needed data is stored is a plus. Reports and data can be distributed to all users, including superintendents. Links to existing E-Mail are possible for text. Existing Cobol based reports can be included into EIS report. Significant consultant training and implementation required. This option represents models seen in most innovative DOC's both in United States and Canada. Used extensively by private enterprise. Consensus selection by EIS Study Committee though Committee reserved specifically selecting a vendor.

3.3 Other Findings

The interview activity also resulted in the following assumptions and findings.

1. The Department has been successful in initiating planning within functional areas to meet critical goals and fulfill its overall mission. Forecasting future workloads, budgeting accordingly and evaluating progress could be rendered less problematical with the provision of an EIS.
2. The Department has also made substantial progress in developing a supporting technological infrastructure. Adequate funding of the projects delineated in the IMS Long Range Plan will contribute significantly to this evolutionary process.
3. The Department's existing computer assisted applications development is linked systematically to the Departments plans and priorities. The PC applications for various divisions remain very unintegrated. Aggressive standardization by IMS could cure this problem.
4. The Departments information services resource development is severely under funded thereby reducing the timeliness and usefulness of information management and use. Staffing levels at IMS largely preclude in-house development of essential projects.
5. Senior Central Office management (with some notable exceptions) is not sufficiently involved in automating their specific functions.
6. Short term operational needs take precedence over long term needs. The majority of information use is reactive rather than proactive.
7. There is a Department IMS Long Range Plan to guide system application developers. Funding levels restrict implementation.
8. The department is populated by "islands" of redundant, incomplete, inaccurate and untimely data.
9. Mid and high level functional managers have inadequate information on which to base decisions, particularly those regarding: 1.) staff development; 2.) bed space related decisions; 3.) program and policy analysis issues; 4.) financial management and budgeting; 5.) the effects of crowding.
10. Current data collection within the Department is process oriented rather than mission oriented. Most data collected is done to meet reporting requirements rather than to pro-actively plan.
11. Central Office has yet to completely determine all of the data elements needed to make long and short term decisions.

4. CONCLUSIONS AND RECOMMENDATIONS

The following are a derivative of the interview process.

1. The Executive Staff must set direction and priorities and monitor performance on information resource management.
2. New systems contemplated must fit into overall data and communications plans. The Long Range IMS Plan should be used to set priorities that support Department mission and goals.
3. The Department must provide managers with the information necessary to make space, staff, resource allocation and other management decisions.
4. The development of an EIS is an integral part of the overall Departmental plan to collect and distribute data.
5. The Department should provide funding for two staff to operate the EIS. One staff should be part of the Planning Division, the other staff of IMS.
6. IMS should continue to develop automated information systems for tracking Departmental Finances, Operational Concerns, Human Resource Development, Community Services, Organizational Management, Juvenile Services and Industries and Farms.
7. IMS should continue its inventory of Department-wide hardware and software use and institute a plan to standardize both products and use.
8. Present decision making seems to dictate the use of a condensed daily report on departmental activity. This basic report would consist of a recounting of the Department's preceding 24 hours of activity.
9. Expanded monthly reports are indicated that can accumulate into quarterly and annual summaries.
10. External data will need to be input into the EIS data base. This data will include county population data and intake and daily population forecasts being generated by several nondepartmental sources.
11. The EIS staff will need to calculate numerous rates and comparisons within the report framework.
12. All reports produced should be in a graphical format with accompanying text data. Descriptive and comparative reports are indicated as most useful. Trend analysis is required.

13. Reports should be available to the Superintendent level as well as the Division Directors for verification and use.
14. Each Department function should formally appoint an information resource manager. The Information Resource Manager would be jointly trained by IMS and DOC Staff Development and Training to create Paradox of IDMS PC data bases and use the E-Mail system. These external data bases could eventually become part of a file merge function to bring useful non-OIS data into the EIS.
15. The transition to 'Windows' as part of the upgrade to DOS 5.0 on executive work stations should be accomplished directly.
16. The EIS Committee should develop an "Action Agenda" and follow it through to completion. The following steps need to be followed to create the transition from feasibility to implementation. The starting date should be immediate.

Step 1. Keep the EIS Committee alive and give it a new charge of overseeing implementation. The membership is good now though adding Deputy Directors who participate would enhance the political viability of the group. A Chairperson should be appointed. Additionally, a representative of the Commissioner's Office should be included in the expanded membership as should a member from DPOC. This decision could be affected by the end of the meeting on December 19th.

Step 2.(a) Departmental Funding. EIS Committee members and the Chairperson should work with the Administration Division to identify alternative funding sources for completion of this project. It may be possible to locate General Funds that have not and will not be used in the current biennium that might be used to support the EIS project. An account by account scan of Department expenditure patterns could find multiple sources of funds. The Financial Division should be asked to provide account funding level, expenditures to date and balance. This review process could start in December and be completed by mid-January, 1992. Funding for this biennium is thought to be the most expeditious method to insure implementation.

Step 2.(b) External Funding Sources. The Committee should formally make application to the Prisons Division of the National Institute of Corrections and the Bureau of Justice Assistance for funds to pay for user and staff training, data base development, screen and template development and customization. The latter agency has funds earmarked for the improved processing and treatment of drug offenders. This process must begin immediately with a proposal submitted by January for March, 1992 funding. Another \$30,000 could fulfill this series of tasks.

Step 3. An Implementation Plan needs to be written that specifies the resources (funds and staff) needed and time table for EIS development and implementation. It will take 30 days to write this Plan. Completion expected by the end of February, 1992.

Step 4. Seek CDPOC and DPOC approval. The Implementation Plan needs approval by these entities. Thirty days each for approval by the respective oversight boards. Completion by May 1, 1992.

Step 5. Staffing decisions need to be made and staff either hired or officially assigned.

Step 5.(a) Consultant Assistance. The EIS Committee could hire consulting help to the Committee during implementation. This would occur immediately prior to the permanent staffing of the EIS function. This short term (no more than 6 months) position would oversee staff training, product selection and report development. Staff could be available whenever funding appeared. Early involvement is recommended.

Step 5.(b) EIS Staff. Staff need to be assigned to the EIS function with responsibilities clearly defined. It is recommended that the Planning Division house one staff while IMS house the other, technical staff. CDPOC/DPOC approval seems to be a good starting point for permanent staff assignment on or about May 1, 1992.

Step 6. The EIS Committee should direct staff to develop either an RFI (request for information) or a BAA (broad agency announcement) and invite all potential vendors to present their products to the Committee. Staff would prepare specific evaluation forms for the Committee to use that followed the product evaluation criteria already established. If this task was accomplished earlier, say in March, vendors could be helpful in developing the Implementation Plan. A decision could be made as early as May 15, 1992 as to which product best meets Departmental requirements.

Step 7. Implementation and Training. Four months are required to install software, write code and train both users and EIS staff. Completion due by October 1, 1992.

Step 8. Proto-Type EIS products available to users. Sixty days are needed to evaluate products, work out technical problems, finish training staff, and to customize screens and data bases. Completion expected by December 1, 1992.

Step 9. "Final" products delivered, subject to constant expansion and evaluation. All consultant help phased out. EIS becomes institutionalized Departmental function. Completed by January 1, 1993.

5. BUSINESS PROBLEMS

The Committee selected those business problems that seemed to occur repetitively and that required consistent and routine decision making.

OFFENDER MANAGEMENT AND CUSTODY

1. Classify and reclassify all offenders to the least restrictive security **level and the** appropriate facility.
2. Investigate and report on offender and staff misconduct.
3. Tram all departmental staff according to schedule.
4. Investigate and report on all offender and staff grievances.
5. Reduce the backlog of IDOC offenders in county jails.
6. Report on staff overtime at all facilities.
7. Conduct departmental employee performance appraisals.
8. Evaluate the classification system.
9. Evaluate internal policies and procedures.
10. Examine staffing vacancies within facilities and other departmental functions.
11. Evaluate offender opportunities within facilities.
12. Monitor the participation of offenders in all programs and work assignments.
13. Establish plans to reduce population levels in all facilities.
14. Report on the screening and treatment of offenders in facilities.
15. Report on the return of IDOC offenders to a higher level of custody following participation in any IDOC program or service.
16. Forecast future work load.
17. Determine per unit cost levels for all programs and services.
18. Review and act upon data comparing IDOC facility, program and service use with other departments elsewhere in the United States.
19. Determine program use and completion levels.

20. Review the availability of offender programs and work assignments within facilities.
21. Determine needed security levels for all future facilities, programs, services and work assignments.
22. Determine staffing credentials by facility.
23. Plot offender movement within facilities.
24. Review staff turnover for each facility.
25. Determine death row count and status.
26. Examine admissions rates and incarceration levels by county.
27. Report on recidivism.
28. Report on incident dispositions.
29. Determine incident rates per facility ADP.
30. Inventory available by site, etc..
31. Produce a classification variance report.
32. Program needs assessment for each offender.
33. Review profiles of offenders housed by location.
34. Report to county judges on lengths of stay in juvenile facilities.
35. Examine staff training availability by training type.

ADMINISTRATIVE MANAGEMENT

1. Review the status of all departmental contracts.
2. Report on all departmental expenditures by account and point.
3. Evaluate all grants to the department.
4. Conduct fiscal audits of all departmental accounts.
5. Routinely report on progress of programs and services to third party funding sources.
6. Forecast future work load.

7. Determine per unit cost levels for all programs and services.
8. Prioritize departmental-programs, projects and goals.
9. Determine the impact of alternative policies, programs and procedures.
10. Monthly expenditures by facility.
11. EEO reports by facility.
12. Report on the characteristics of all IDOC contracts.

FACILITIES MANAGEMENT

1. Inspect all facilities and county jails.
2. Monitor all facility construction and remodeling relative to schedule.
3. Evaluate the physical conditions within facilities.
4. Report on construction/remodeling costs for each IDOC project.
5. Report on the phasing in of additional bed space by location and security level.
7. Report on the rated capacities of all facilities.
8. Examine future construction costs by examining historical construction costs.
9. Review facility operational and physical plant characteristics.
10. List types of audit exceptions for each facility.

COMMISSARY MANAGEMENT

1. Budget properly for inmate purchases.

COMMUNITY SERVICES MANAGEMENT

1. Evaluate offender opportunities within field services.
2. Report on the screening and treatment of offenders on parole.
3. Forecast future work load.
4. Determine per unit cost levels for all programs and services.

5. Determine program use and completion levels.
6. Report on recidivism.
7. Determine use and occupancy levels for all field services.
8. Report on violations by offenders after discharge.
9. Analyze quarterly field reports.
10. Program needs assessment for each offender.

INDUSTRIES AND FARMS MANAGEMENT

1. Evaluate offender opportunities within industries and farms.
2. Determine program use and completion levels.
3. Report on profit and loss.

INMATE EDUCATION MANAGEMENT

1. Collect and report on educational accountability data for each institution.
2. Evaluate offender opportunities within educational setting.
3. Determine program use and completion levels.
4. Determine staffing credentials by facility.
5. Assess educational achievement gains for inmates participating in educational programs.

HEALTH CARE MANAGEMENT

1. Report on the screening and treatment of offenders.
2. Review special medical problems by facility.
3. Report on costs of medical care by location and type.

FOOD SERVICE MANAGEMENT

1. Inventory available by site, type, function, account.

PUBLIC AFFAIRS AND LEGAL SERVICES

1. Determine fiscal and programmatic impact of legislative changes.
2. Determine fiscal impact of departmental operations by county.
3. Report on recidivism.
4. Report on the characteristics of all IDOC contracts.
5. Determine intra facility criminal infractions and note filing status and costs of prosecution.

6. INFORMATION ELEMENTS, REPORT CONTENTS AND FREQUENCY

Business problems were decomposed **into** specific **data elements**. The **data elements** were categorized by frequency of use by top management and location within the department (O=OIS, E=external to the Department, D=non OIS data base being maintained by some function of the Department).

The following section places information elements into specific reports. Each report is classified by the frequency of its use. Every report is to institution or division based and preceded by a description of the institution or division. The reader shall be able to select a series of comparative statistics of all institution activity for the day and then select specific institutions for a more specific analysis of events. The comparative data will allow the Commissioner to determine anomalies in the data and provide the Superintendents and Directors with a method of reviewing their workloads with those of other sites. The reader will also be able to move backward in time to assess changes in activity over time. The reports shall be linked into the E-Mail system allowing the reader to send comments and sections of the report to other sites for their review and explanation.

Again, each institution or division report shall be preceded by a basic description of the facility or division. These basic data are presented as follows.

1. Location
2. Superintendent/Director
3. Date Facility Opened
4. General Classification/Purpose of Division
5. Type of Facility: Age Sex of Population and Facility/Division Function
6. Rated Capacity by Security Level
7. Last Inspection Date
8. Inspection Deficiencies
9. Court Set Capacity by Security Level
10. Budget by Account
11. Academic Programs Available
12. Vocational Programs Available
13. Work Programs Available

14. Number of Volunteer Programs
15. Number of Staff by Type
16. Number of Staff Vacancies'
17. Number of New Beds expected in Next Twelve Months
18. Beds Expected to be Lost in Next Twelve Months

THE DAILY REPORT

Components: Daily Report		Source of Data
1	Number of new intakes by county by facility	0
2	Age sex race of new intakes	0
3	Offense types and levels for new intakes	0
4	Maximum sentence length for new intakes	0
5	Classification levels of new intakes	0
6	Number of inmates held in county jails awaiting transfer to state institutions by jail site and security level of inmates	E
7	Daily count of inmates with percent utilization of capacity and rated capacity	0
8	Daily facility by facility count decomposed by: a. classification/security level of offender; b. county of inmate commitment; c. age sex race; d. in segregation; in infirmary	0
9	All Institutional Incidents by site	D
9a	Critical Incidents per 100 inmates by type by site	D
10	Incident disposition by type and site	D
11	Inmate Deaths by method and site	D
12	Number of inmates moved within facilities by security level	0
13	Number of inmates on life sentence by facility	0
14	Death row count by facility	0
15	Releases by Type	0
16	Releases by county	0
16a	Releases by facility	0
17	Number of special needs offenders by type and facility and security level and sex	0
18	Number of inmates answering sick call by facility	0
18a	Ratio of inmates answering sick call to daily count	D
19	Number of staff/inmate disciplinary actions by type by facility	D
20	Number of work release offenders by site	0
21	Number of work release beds by site	D
22	Ratio of work release offenders to work release beds	D
23	Number of releases from parole by district by method of release	0

THE MONTHLY REPORT

Components: Monthly Analysis		Source of Data
1	Inmate Deaths per 100 inmates by site	D
2	Escapes per 100 inmates by site	D
3	Number of staff by site	D
4	Inmate to staff ratio by site	D
5	Number of staff vacancies by site	D
6	Ratio of vacancies to staff by site	D
7	Number of staff leaving facility by reason by site	D
8	Number of employee grievances by facility and type	D
9	Ratio of employee grievances to number of employees by site	D
10	Number of inmate grievances by facility by type	D
11	Ratio of inmate grievances to number of inmates by site	D
12	Length of stay analysis (released inmates) decomposed by: a. classification level; b. offense type; c. age sex race; d. release type; e. sentence length; f. program or work assignment participation type	O
13	Ratio of disciplinary actions to number of staff/inmates	D
14	Number of inmates participating in programs and work assignments by program type and facility	O
15	Number of inmates completing programs by program or work assignment type and facility	D
16	Ratio of inmates completing programs to inmates participating	D
17	Expenditures to counties for inmates held awaiting transfer to state institutions by county jail	D
17a	Funds provided to IBS and IGS for housing juveniles by county	O
18	Facility expenditures and balance by account number	O
19	Percent expended	D
20	Extrapolated year end expenditure level by facility	D
21	Staff overtime expenditures by facility	D
22	Monthly cost per day served by facility and security level	D
23	New beds expected during ensuing 12 months by facility/site and security level of beds	D
24	Expenditures for capital projects by site	D
25	Per bed and per gross/net square footage costs per capital project by site	D
26	Number of beds lost to construction by security level, facility with date within next twelve months	D
27	Total number of commissary items sold by type and facility	D
28	Total dollar amount of commissary sales by type and site	D
29	Profit from sales by type and site	D
30	Number of people on parole by district	O

Components: Monthly Analysis		Source of Data
31	Number of people to be paroled by date and sex and adult versus juvenile	O D
32	Number of admissions to parole by facility and district	O
33	Number of parole violations for a) technical violations; b) new offenses	O
34a	Dispositions by type of violation	O
34b	Elapsed time from parole entry to violation	O
35	Number of parole positions by district	D
36	Number of parole agents by district	D
37	Ratio of vacancies to positions by district	D
38	Number of parolees by county	O
39	Number of parolees returned to facilities by district	O
40	Ratio of parolees to parole agents by district	D
41	District expenditures for parole services	D
41a	Per parolee cost for supervision	D
42	Number of parolees employed or in school by district	O
43	County by county totals for receipt of community corrections and juvenile maintenance funds	D
44	Number of job positions available by facility by type of labor	O
45	Number of inmates employed by site and type of employment	O
46	Forecasted sales by type	D
47	Actual sales by type	D
48	Number of inmates by facility with 11th grade or lower educational levels	O
49	Number of inmates enrolled in educational programs and correspondence courses by program type and facility	O
50	Ratio of enrolled inmates to eligible inmates	D
51	Number of inmates leaving educational programs by reason, program and site	D
52	Number of student educational hours by site and program type	D
53	Ratio of educational hours earned to number of inmates enrolled by program type	D
54	Number of teachers by site and program type	D
55	Ratio of student to teachers by program type and site	D
56	Number of inmates on work/study by site	O
57	Number of work/study vacancies by site	D
58	Ratio of work/study vacancies to inmates participating by site	D
59	Number of medical staff by type and class by facility	D
59a	Inmate to medical staff ratio	D
60	Number of infirmary beds by facility	O
60a	Number of inmates awaiting an infirmary bed by site	O
61	Medical occupancy percent by facility	D
62	Medical expenditures by account level and facility	D

Components: Monthly Analysis		Source of Data
62a	Per diem inmate medical costs by site	D
63	Number of inmates in external hospitals by reason	O
63a	Expenditures for inmates in external hospitals	D
63b	Per inmate cost for external hospitalization by site	D
64	Number of psysychological/sex offenders by facility	O
65	Number of inmates with diagnosed substance abuse problems by facility	D
66	Total food expenditures by facility	D
67	Number of lawsuits by type by facility (including tort claims)	D
68	Number of media/public/legislative inquiries by type	D
69	Number of public appearances by type	D
70	Number of inmate service projects and labor by county and type of project	D
71	Number of work release violators by site and nature of violation	O
72	Work release expenditures by site	D
73	Per offender cost for work release	D
74	Inmate payment deductions by category by site	D

QUARTERLY TRENDS REPORT

Components: Quarterly Trends		Source of Data
1	Forecasted daily population (adult and juvenile) by age sex crime class	E
2	Forecasted bed space by site and level and year	D
3	Forecasted intakes (adult and juvenile) by age sex crime class	E
4	Forecasted number of parolees by district	D
5	Ratio of actual sales to forecasted sales by type	D

ANNUAL REPORT

Components: Annual Report		Source of Data
1	Profit from sales by type	D

7. SYSTEM ENHANCEMENTS AND REQUIREMENTS

The Department will need to insure that all Divisions and facilities providing data for the **EIS** also have access to the reports being generated. The audience will include the Commissioner, the Division Directors and Superintendents. Because the product selected will probably operate in an environment that shares processing between the mainframe and the users work station, upgraded work stations are essential.

Machines with the 80286 microprocessor are adequate but the random access memory requirements especially in a "Windows" and "GUI" environment currently exceed that available in these machines. Six (6) megabytes are recommended. Additionally, hard disk storage space on the work stations should be enhanced to allow users to capture and store parts or all of a days or months activity at their site. It is suggested that a minimum of 80 megabytes of hard disk storage be available for each station.

In all cases upgrading the operating system at the work stations to DOS 5.0 with Windows is recommended. Doing so suggests the need for 80386 microprocessors at all work stations and fitting each with a GUI or "mouse". Minimal VGA would be 640 by 480 pixels. In the Central Office this suggests the need for nine (20) new work stations. The highest priority work station would be located in the Commissioners Office, Legal Services, Public Information, Planning, Internal Audits, Adult Operations, Juvenile and Field Services, Programs, and Administration. The Planning Division could take advantage of a 80486 processor running at 25 or 33 Mhz system with 8Mb of RAM and 150 to 200 MB hard disk drives due to the heavy work load expected there both with the EIS and with the ultimate provision of PC SAS.

Upgrading all facilities requires at least 24 new or upgraded work stations if work release sites are included.

7.1 COSTS AND ORGANIZATION

7.1.1 Equipment

Twenty new Central Office work stations will cost the department \$70,000 for Zenith Z386/25 Model 150. Some of the old 80286 machines could be moved out to the facilities or out into the office space.

Twenty four facilities requiring the same type of work station can be upgraded for a total of \$84,000.

Total equipment upgrades would cost the Department \$154,000.

7.1.2 Staffing

Initial development will require six weeks of consultant time at approximately \$1000 per day. Conservatively the Department should budget \$30,000 for this effort. Training can be run in modules. We should expect to train the EIS staff in 24 days at \$350 per day for a total cost of \$8400. The EIS staff could then ask the assistance of the DOC Staff Development and Training Division

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Appendix 2.
Interview and Data Collection Forms

OTHER

IRI was founded in the mid 1970s and is a publicly held company. They report \$170 million in sales revenue and claim to be on track for \$200 million this year. USWest in Colorado uses pcEXPRESS on a LAN with 800 MB of data. Some of IRI's mainframe databases are as large as 7 or 8 Gigabytes. EXPRESS is written in the C language.

CONTACT

Jim Kerk (312) 715-2689 /Chicago. Jim would like an opportunity to demonstrate IRI/EIS to you in Chicago.

Appendix 1.

Product Evaluations

Product Evaluation Results

Factor and Weight		Products				
		Commander	Lightship	Pilot Command Center	SAS/EIS	EIS/IR
Environment	5	15	10	25	25	20
Output	3	15	9	15	9	12
Interactive Capabilities	4	16	12	16	16	16
Data Access	4	20	12	20	16	20
E-Mail	3	12	6	12	6	9
Data Limitations	3	12	9	12	12	12
Summarization Functions	4	12	12	12	20	12
Staffing	4	12	16	16	8	12
Security	3	15	15	15	15	15
Support	4	16	20	16	12	16
Price	4	8	16	12	12	12
Applications	5	25	10	25	5	20
Stability	4	20	20	20	20	16
Total of Ranks		198	167	216	176	192

to create a viable plan for training users. The Staff Development and Training Division would be especially helpful in training institution based users.

As important is the Department's need to commit staff to the on-going maintenance of the project. It is suggested that a staff person from the Planning Division be assigned to the EIS to handle analysis concerns. This staff person must be well versed in rigorous statistical analysis methods and have a strong multi-platform computer background. Additionally, a technical staff person would be required at IMS to be responsible for the OIS file extract, hardware and software trouble shooting and telecommunications issues. These staff would at least initially work full time on the EIS. Correctional Services of Canada uses three full time EIS Staff as does Target Stores. The files in use at these sites are larger than those of the IDOC thereby requiring a somewhat less significant commitment. Annually it is estimated that \$70,000 would be required to staff these two positions.

7.1.3 Software

Three major vendors have developed products and reputations that seem to dominate the current EIS market. PILOT, COMMSHARE and IRI have demonstrated corporate products that meet Department criteria to some extent. Additionally, the SAS group have promised an EIS product that may surpass these other products in terms of analytic power.

Specific cost data is difficult to collect from vendors. They premise their costs upon the need to adapt their product to the computing and user environment, an environment they consider amorphous until their own systems and needs analysis is complete. Extensive interviews with both vendor representatives and field users suggest costs of between \$150,000 and \$250,000 for main-frame based packages. Department budgeting for the purchase of such a package should target the upper end of the range. The Implementation Committee can require the vendor within the RFI to specify costs per feature of the software and then recommend not purchasing modules that have limited use relative to the cost or that are replicated by existing utilities found in the ISD environment.

APPENDICES

"COMMANDER"
COMSHARE INC.
3001 S. STATE STREET
ANN ARBOR, MI 48108
1 (800) 922-7979

ENVIROMENT

Commander operates "co-operatively with host and PC / PC network configurations." Rather than a general SQL server, commander has its own reporting database called "Executive Information Base." Commander's client/server architecture is flexible, allowing different steps in data manipulation to occur at either the host or the client level. Rather than employing a true PC-as-client/mainframe-as-server approach, however, typical installations rely on downloads to LAN servers to subjugate the need to be constantly connected to the mainframe and using its resources. Downloads can be configured so that they only transfer information that has changed; complete data transfers are not always necessary.

PC stations need 2Meg of RAM. The PC client software runs either as a stand alone DOS application or native under OS/2 1.3 or above.

OUTPUT

Output can be either graphical or text with single or multiple pages of document or image printed at the discretion of the user. Commander offers drill-down capability on both tables and charts. These reports are not data-driven. That is, for example, if a new site is added to the database, a bar chart showing data for each

site will not automatically include a new bar for the new site. Comshare claims, however, that the system is extremely easy to modify.

INTERACTIVE CAPABILITIES

In addition to the "canned" drill down reporting Commander also offer an interactive analysis facility called ExecuView. ExecuView functions like an easy to use (no-typing) spreadsheet with the Executive Information Base data preloaded. Users can also start from scratch if they wish, selecting any two variables from the database to be the initial rows and columns in the spreadsheet and then go from there. This is where "what-if"^w analysis can take place.

DATA ACCESS

Data may be imported from spreadsheet or data base files from the local work station or the host. Commander is unique in its ability to incorporate reports that an MIS department is already producing "as-is." An ASCII or EBCDIC image of the report on file can be the basis of a Commander on-line report. Color emphasis and scrolling capability can be added to a report "co-opted"¹ in this manner. Commander's database can have virtual tables on or import data from data stored in a variety of other database products including SQL/DS, DB2, FOCUS, IMS, and EASYTRIEVE PLUS (IDMS) -- PC software as well, including Paradox.

Commander can be set up to automatically down or upload information between PCs and mainframe. This can be set up to take place nightly, for example.

EMAIL

Commander offers- links- to existing E-Mail systems adding automated periodic checks for-incoming mail and a GUI interface. This component is called "Ready-Mail." Screens from the other Commander components can be captured and turned into mail messages that can be annotated before sending off. If your existing E-Mail system cannot handle graphical mail (most cannot), you can still capture textual screens.

DATA - LIMITATIONS

There are no limitations on the size of the files or numbers of variables incorporated into Commander other than the technical limitations of your hardware configurations.

SUMMARIZATION FUNCTIONS

Commander statistical capabilities covers the basics: summation, variance, means, percentages and ratios.

STAFFING

Although marketed as a simple and user friendly system a significant amount of labor intensive design, proto-typing and training will be necessary. Discussions with the marketing office in Michigan suggest that a significant amount of computer literacy or confidence is implicit in the use of the ExecuView interactive component (essentially a degree of spreadsheet savvy). Both mouse and "touch screen" technology is supported and all end user interaction takes place through this technology. Correctional Services of Canada uses five (5) staff to operate their EIS which is twice the size of that contemplated in Indiana.

SECURITY

security is handled on a user profile basis. Each user has a login password and can be set up for specific access to any of the screens.

SUPPORT

support is extensive through the phone, regional training, consulting and local users groups. Phone support is available 12 hours per day. On difficult problems, the tech support staff will work away from the phone and call back with solutions, thus sharing the phone cost. It is not toll free. There is a user group located in Chicago. Comshare also hosts a large 4 day annual user group conference in a different city each year. Last conference was attended by 1100 users. They also have traveling 1 day technical seminars that cost \$300 to attend. Users claim the need for significant technical support.

PRICE

Price is variable depending on final configuration but will start at approximately \$50,000. Some installations have cost much more than this, up to \$300,000. This is a one time cost. Free upgrades for 1 year (if any come out). No official maintenance or upgrade policy beyond this. Correctional services of Canada has spent \$500,000. developing their nation-wide EIS. Our only corrections model of the products making this list. One Commander product in Washington State was replaced recently by Pilot.

OTHER

Comshare is committed to Digital's NAS and IBM's SAA guidelines. Comshare has been in business 24 years and has been selected a Software Magazine top 50 software vendor. Comshare is a publicly held company. Clients include the Department of Justice, Department of Commerce, US Army, State of Washington, and Correctional Services of Canada. This latter entity took six weeks to develop their system uniting 60 institutions and parole offices. this system requires 5 full-time staff to operate.

ExecuCom software (Executive Edge) has been purchased by comshare.

Management Science of America (SmartView) has been purchased by Cornshare.

"LIGHTSHIP"
PILOT EXECUTIVE SOFTWARE INC.
40 BROAD STREET
BOSTON, MA 02109
1 (800) 944-0094

ENVIRONMENT

Pilot offers software that operates on both PC and main frame environments and can run in a client/SQLserver mode. The PC EIS is called Lightship and the Mainframe EIS is Command Center.

Lightship PC stations require Windows3 and "2MB of ram with 4MB recommended." Realistically you will need at least 4MB of ram. PC stations can be running Windows standard mode, but Lightship runs intolerably slow in this mode (as demonstrated at Colorado University). Windows enhanced mode is better. Windows enhanced mode crashes much less frequently when running on a PC with at least 4MB of RAM. Note that Windows enhanced mode is only available on the 32bit PCs (386 or 486).

Lightship is essentially a PC based object oriented applications development environment that concentrates on drill down data presentation. Think of Lightship as a modular Windows product. In order to serve as a full function EIS, Lightship would most likely need a PC based SQL server accessible to all workstations, the LENS package (which is only recently available), and a copy of Microsoft EXCEL for each workstation.

Lightship is oriented to producing reports and charts on the pc monitor. Lightship is capable of producing a several kinds of bar and line charts, pie charts, area charts and tables. The applications developer can define "hot spots" anywhere on a screen. hot spots can call up another screen designed by the developer. Typically this would be more detailed information. Printing of reports is limited to print-screen. As with other PC solutions, HIJACK screen capture software could be used to make graphic files of the screens that could be imported into an advanced word processor such as WordPerfect or Word. Categories in reports are not data-driven.

INTERACTIVE CAPABILITIES

Lightship's forte is presentation. There are no "What if" capabilities. Your applications development staff would have to build in any new analysis that your users would like to see. Alternatively, if user knows EXCEL and your are using that at each workstation to augment Lightship, users could switch over to EXCEL for "what if" analysis. All of Pilot's EIS software offerings concentrate almost exclusively on data presentation and data access. Analytic capabilities are limited. The philosophy is that analysis is done at the source from where the data is being accessed. For example, if data from a spreadsheet is being displayed, whatever analysis is desired should have been done in the spreadsheet. From their literature: "In Pilot's EIS, the relational query is a user-specified, custom report. Our system

allows you to save these reports so that they can be called up again with new data. Because-most of these analyses are performed on a regular basis, this feature saves a great deal of executive time, and eliminates the tedium of collecting data and performing repetitive calculations."

DATA ACCESS

Pilot offers a companion product for Lightship called Lens, which is able to access data in many PC software formats. Without Lens, Lightship can only access data through DDE or in ASCII files. DDE is Window's "hot-link" facility. DDE is not useful for multi-user EIS since Windows is not multi-user. With Lens, a separate EIS database could be set up using any of the many file types it can access, including a multi-user SQL server on either mainframe or LAN. Lightship w/Lens could directly access Paradox database files, for example. Once Lightship has accessed a particular datafile it stores it as a table in the workstation's RAM {Lightship calls this a "document object"}. Data Access happens at the time a hot spot request from the user needs the data.

EMAIL

Lightship has no facility for linking to or providing E-Mail. Screens can be saved to text files which can then edited and mailed by your existing email system. Since Lightship runs under Windows, it is possible to configure a Lightship button (hot spot) that starts up your email application.

DATA - LIMITATIONS

There are no limitations on the size of the files or numbers of variables incorporated into Lightship other than the amount of RAM.

SUMMARIZATION FUNCTIONS

Although Lightship is not oriented towards analysis, it does offer basic looping and branching commands which a developer can apply to the document objects. Summarization functions that could be applied within these loops or on any single cell or group of cells in a document object. They include addition, subtraction, multiplication, division, absolute value, frequency, max, min, mode, and sum.

STAFFING

As with any EIS, initial development will take time, but the straightforward concepts and limited functionality of the product would require few people for ongoing maintenance. Since Lightship really just addresses one specific task -- drill down data presentation -- a developer who understands how to create screens and hotspots should be able to quickly modify and extend any existing system. The underlying document object (RAM table) concept is easy to understand.

SECURITY

Security is handled on a screen access basis. Passwords can be assigned to any Lightship Screen. If you know a screen's password then you can access the screen.

SUPPORT

Pilot has a 12 person technical support group that supports all of their products. They cover the phones from 8:30am to 8:00pm EST. Lines are toll free. There is also a BBS (not toll free) that is up 24 hours.

PRICE

LAN packs: \$2495 for 5 users; \$12,000 for 25 users.
Maintenance plan includes free upgrades for \$200 per year.

CONTACTS

Sally Comcowich 1-800-944-0094 x456 /Boston

OTHER

Pilot has been in business since 1984. Lightship is a new product which they have developed "from scratch." The majority of their business has been with their mainframe Command Center product line.

"PILOT COMMAND CENTER AND ADVANTAGE/G"

PILOT EXECUTIVE SOFTWARE INC.

40 BROAD STREET

BOSTON, MA 02109

1 (800) 944-0094

ENVIRONMENT

Pilot Command Center is a relational database and EIS for mainframes. Pilot Command Center's native language resembles FOCUS. Command Center does not have an object oriented application facility such as Lightship, but Pilot has developed some interesting Command Center EIS code generators. Among these is Advantage/G (/G for code Generator). With a code generator, a developer can create end user applications by using mouse driven menus. The code generators create Pilot database/Command Center source code, which can be compiled. Commander based systems can be set up with client server processing where the Pilot mainframe database functions as the server and a DOS PC application functions as the client. Pilot Command Center installations typically do not employ downloads a la Cornshare's Commander.

Command Center includes a group of development tools that can be purchased separately. These include editors, debuggers, screen formatters, and "data acquisition bridges." With a Advantage/G, it might not be necessary to purchase all of these tools.

Advantage/G is designed for hierarchical, periodic data such as Balance Sheets, Financial reports and geographical breakdowns of business activity. Its basic functionality includes drill-down, trend analysis, and exception reporting. Application development consists of using mouse driven menus.

OUTPUT

Multiple pages of document formatted for printer or a screen image can be printed at the discretion of the user. Drill-down functionality can be built into any user screen. Bar and line charts available. No Pie charts. Reports are data driven. If, for example, a new site is added to the database, a bar chart showing data for each site will automatically include a new bar for the new site.

INTERACTIVE CAPABILITIES

Limited "what if" analysis can be performed in an associated Command Center worksheet area which Advantage/G applications can tie into.

Ad hoc charts can be generated from on screen data. Advantage/G's hierarchical orientation fully exploits "pre-analysis** to achieve fast response time. This limits the extent of its interactive capabilities, however. Pilot does offer a code generator called Multi-Path/G which generates applications that do data selection and manipulation on the fly. As Advantage/G relies on the host database for all of its data, not even total lines are calculated on the fly. In this sense it is similar to the Lightship product -- emphasis is on data presentation only. Thus,

Pilot's Multi-Path/G combined with their Dimension/G would function like Comshare Commander's ExecuView or IRI's EXPRESS interactive query and modeling systems.

DATA ACCESS

Command Center's data acquisition tools can import and access live data from both mainframe and popular PC data formats, including Paradox. Also, automatic updates to the database can be scheduled for off hours.

EMAIL

Command Center applications have access to Pilot's mail system. Any screen can be captured, annotated, and sent to another EIS user. There does not, however, appear to be any facility for hooking into a mail system that is external to the Pilot EIS.

DATA - LIMITATIONS

None. Limited by hardware.

SUMMARIZATION FUNCTIONS

Advantage/G itself is limited to simple arithmetic calculations. The host database, however, probably contains all the necessary functions and that is where all analysis would take place.

STAFFING

This software may require extensive central MIS support depending on the how effective Advantage/G really is at isolating developers from the native Command Center language. Nevertheless, the Command Center language itself appears to be a fourth generation language and will be much more effective than a third

generation language (such as COBOL) if it indeed proves necessary to use it. (Fourth generation languages minimize the programmer's need to manage data structures in RAM.) Regardless, some level of mainframe database expertise will be necessary to get Command Center up and running on a machine. This is true of any mainframe database software. Obviously, Command Center is quite different from Lightship. The State of Washington's Office of Financial Management used three (3) programmer analysts to operate their EIS.

SECURITY

User login profiles can be set up to limit access to any screens created in Command Center. This also applies to screens created by using Advantage/G.

SUPPORT

The same tech support lines that cover Lightship cover Command Center. There is also a regional sales office in Itasca, IL. Regular training through "Pilot University" (Pilot's training center located at the main office in Boston) includes an Advantage/G course, a Command Center Language course, and a Data Import and Extraction course. Expect to train staff for 12 days at \$350. per student day to familiarize them with this product.

PRICE

Price is variable depending on final configuration. Pilot does continually improve their software. When using one of Pilot's code generators such as Advantage, user sites can quickly upgrade applications by simply pulling them into the newer code generator and then regenerating the application code. The software can cost

\$100,000. with free upgrades. Training and consulting to implement the system will cost \$30,000. There is a \$20,000. maintenance agreement which again includes free product upgrades.

OTHER

Pilot Command Center is used by the Office of Financial Management (and four other state agencies) in Washington State. Advantage/G was released in 1988. Command Center itself was originally introduced in 1984, when Pilot Executive Software Inc. was founded. Pilot does offer a separate decision support product called FCS, which they obtained through a the acquisition of Thorn EMI Computer Software Inc. in 1989. FCS is currently not integrated into their EIS offerings. Pilot is a privately held company.

CONTACTS

Dave Bodie (708) 318-7090 /Chicago

Kevin Willoe (617) 350-7035 /Boston

"SAS/EIS"
SAS INSTITUTE INC.
SAS CIRCLE
CARY, NC 27512-8000
(919) 677-8000

ENVIRONMENT

Base SAS software runs on every commercially viable machine except the Macintosh. It even is available on the NEXT platform. Recently SAS Institute has begun to develop vertical applications based on the SAS system. One of the latest offerings, still currently in beta-testing, is SAS/EIS. SAS/EIS is actually built on top of another SAS product called SAS/AF-SCL. This EIS product should be available soon, since SI (SAS Institute) has been sending sales representatives out to demo the product in different cities for several months now.

The sales demo runs under OS/2 and on an IBM mainframe, so those platforms will probably see the production release first. Most 286 level and above PCs can run OS/2. The current version of OS/2 (v2.0) runs 32 bit machines in their native mode. This means, essentially, 386 and 486 hardware will perform faster and with less crashing. Machines running OS/2 should have at least 4Mb of RAM. The base SAS language is almost identical on every platform, so SI should be able to port the EIS to all platforms within 1 year.

OUTPUT

SAS/EIS is basically-a drill-down reporting interface that SAS programmers can use to link-to the entire SAS system. EIS can call any SAS analysis procedure (PROC) for on the fly analysis and calculations such as regression analysis, analysis of variance, linear modeling, time series analysis, tabular reporting or charting. Output can be formatted appropriately for screen or printer.

INTERACTIVE CAPABILITIES

SAS/EIS does not have any interactive "what if" built in, but perhaps SAS/CALC, SI's full screen spreadsheeting language could be called from within EIS, and pre-loaded with the relevant data. Do not consider this a strong point of the system, however.

DATA ACCESS

Base SAS has its own file type and can access a few other files types directly, such as SPSS and OSIRIS. In the new (v6.x) version of SAS, SAS files can be indexed and data set up in the normalized relational form, essentially making SAS a relational database package, albeit with stronger reporting capabilities than on line transaction processing capabilities. SAS cannot currently directly access data in IDMS databases or in Paradox PC databases. Data from Paradox can be translated to .DBF (dBaseIII) format which SAS can translate into its format. .DBF and mainframe DB2 files can be accessed live read-only via SAS/ACCESS views. SAS does offer its own PC to mainframe link for data transfer and remote

access called SAS/CONNECT which requires a synchronous (IRMA connection).

EMAIL

SI does not offer email software. The EIS package has no email facility.

DATA - LIMITATIONS

Size of SAS datafiles is limited only by hardware. SAS/EIS does not hold everything in RAM like Lightship does.

SUMMARIZATION FUNCTIONS

Base SAS offers mean, weighted mean, mode, median, sum, weighted sum, standard deviation, variance, percentile, statistical ranking, frequency, correlation coefficients and more. SAS used to stand for Statistical Analysis System.

STAFFING

SAS/EIS cannot be used by developers without an understanding of base SAS. Base SAS is a forth generation language and does have a mouse/menu interface available (called ASSIST) but it does take some time to learn. Its easy to get going in, but offers conceptually somewhat different tools for programming/problem solving than most programmers of third generation languages are familiar with. You will need a knowledgeable SAS programmer to set up and maintain the EIS system.

SECURITY

Do not know what security features SAS/EIS offers at this time.

SUPPORT

There are many local SAS user groups in addition to annual user group conferences in-US, Europe and elsewhere. SI offers CBT (computer based training), video, and/or instructor based training for all of its products. SI places a major emphasis on training. Regional Instructor based training comes to major cities like Chicago. Most SAS Instructor based courses cost around \$500 and last for 2 or 3 days. There is a regional sales office in Lombard, IL (phone: 512-258-5171).

PRICE

All SAS products are licensed annually. I speculate that SAS/EIS will cost \$1000 per year on top of the cost of base SAS software with the Applications Facility.

OTHER

SI is a privately held software company. SI reports 1990 revenues at \$240.2 million, with software installed at over 20,000 sites in 105 countries. SAS software is used by over 30 US departments and bureaus, including the Department of Justice and Information Services Division of the State of Indiana. SI is an IBM Business Partner (SAA), a Digital Equipment Marketing Partner (NAS), an HP Premier Solution Provider, and a Catalyst Gold Partner with SUN Microsystems.

CONTACT

Regional Office in Lombard, IL (512) 258-5171

EXECUTIVE INFORMATION SYSTEM
INFORMATION RESOURCES INC
200 FIFTH AVENUE
WALTHAM, MA 02154
1 (617) 890-1100

ENVIRONMENT

IRI/EIS is one of several applications that IRI has developed for use with their decision support database system called EXPRESS. IRI offers versions of EXPRESS for both PC and mainframe environments. The two products are so similar that mainframe code can be developed and tested on PCs and then uploaded for final testing. Like Pilot's command Center, EXPRESS can operate in a PC-as-client/mainframe-as-server mode.

PC stations require 4MB of ram and operate on DOS.

OUTPUT

Output can be either graphical or tabular. A report generator is available to the developer for creating both print and screen reports which an application can call. IRI/EIS can produce bar, line and Pie charts as well as scatter plots. Exception reports can be set up so that if a high level number is within tolerance but its contributing factors at a more detailed level are not, the number still shows as an exception. EXPRESS/EIS does offer drill-down (they call it "zoom-in"), however, it is not implemented using "hot-spots" such as in Pilot.

INTERACTIVE CAPABILITIES

EXPRESS offers extensive interactive capabilities since it is designed as decision support database. "What-if" analysis can be applied to the results of any query.

DATA ACCESS

EIS can import data in 123 or DIF format but not dBase format. SAS files can also be read directly. To get data out of an IDMS system, a language with built in IDMS navigation tools such EasyTrieve would be necessary. IRI/EIS has a "data reader" which helps developers quickly define layouts for flat files to be read into the database.

EMAIL

IRI/EIS allows text and graphic transmission between work stations. Users can annotate a given graph with text and then send it to other users of the EIS system. There is also a tool kit for developers to use for hooking into existing 3rd party email facilities. Email can even be used as an exception reporting mechanism. If the EIS detects a certain number is out of range, it can create a graph and send it to a designated user via the mail, automatically.

DATA - LIMITATIONS

There are no limitations on the size of the files or numbers of variables incorporated into EIS other than the technical limitations of your hardware configurations.

SUMMARIZATION FUNCTIONS

Statistical capabilities are good. EXPRESS offers mean, standard deviation, regression, correlation, time series, financial functions and more.

STAFFING

Significant Staffing may required for the development maintenance of this software, depending on how appropriate the EIS system is "out of the box." IRI markets EIS as one of their "customizable application products written in EXPRESS." EXPRESS is a fourth generation language which will need to be learned in order to do customization.

SECURITY

IRI/EIS security is quite flexible. Even an individual cell on a given screen can be secured from specific users.

SUPPORT

Support is available through regional offices. Offices close to Indianapolis are Hudson, Ohio and corporate IRI's headquarters in Chicago, Il. \$300 per day, 2 or 3 day training courses are offered periodically in Chicago. There is a DBA course, an EXPRESS language course, and a course specifically for EIS. There are support lines but they are not toll free. There is an EXPRESS computer based training package.

PRICE

Price varies by configuration but will start at approximately \$40,000. They offer an extended support agreement that includes new releases and "extended hot-line assistance." This costs 15% of the purchase price per year.

Interview Form

Name:

Position:

Reports to:

Committee membership:

Routine decisions:

Business Decisions:

Ad hoc decisions:

Computer Use:

Existing Systems used:

PC based systems Used:

Reports Used: Refer to Output Forms:

Report satisfaction:

Missing reports:

Missing Data:

Input Review Form

Dictionary Name:

What system does **it run on**:

Purpose of System:

List people who input data and sites:

Assess Accuracy:

List reports generated from system:

List end users of reports generated:

Assess satisfaction:

Output Review Form

Report Name:

What system does it run on:

Purpose of Report:

List people who use report and sites:

Frequency of Production:

Describe nature of report (descriptive/inferential):

Assess Transparency:

Assess Succinctness:

What business problem does it address:

Systems Review Form

System Name:

Hardware Configuration:

Operating software:

Routine report software:

Ad hoc reporting software:

Name of system Managers:

List users:

List input sources:

List output reports:

List ad hoc users:

List linkages to other systems:

What business problem does it address:

Appendix 3. Committee Members

EXECUTIVE INFORMATION SYSTEM STUDY COMMITTEE
COMMITTEE MEMBERS

Clay Fattore
Director, Administration

Nancy Broglin
Director, Industries and Farms

James Hmurovich
Director, Strategic Planning

Robert W. Hughes
Director, Information Management
Services

Thomas F. Norris
Director, Programs/Community
Services

Chris Meloy
Asst. Director, Juvenile Services

John Nunn
Director, Adult Operations

Rex C. Becker
Information Management Services

V.L. (Butch) Guimond
Micro Computer Training Coordinator
Staff Development and Training

Susan K. Tharp
Project Director
Information Management Services

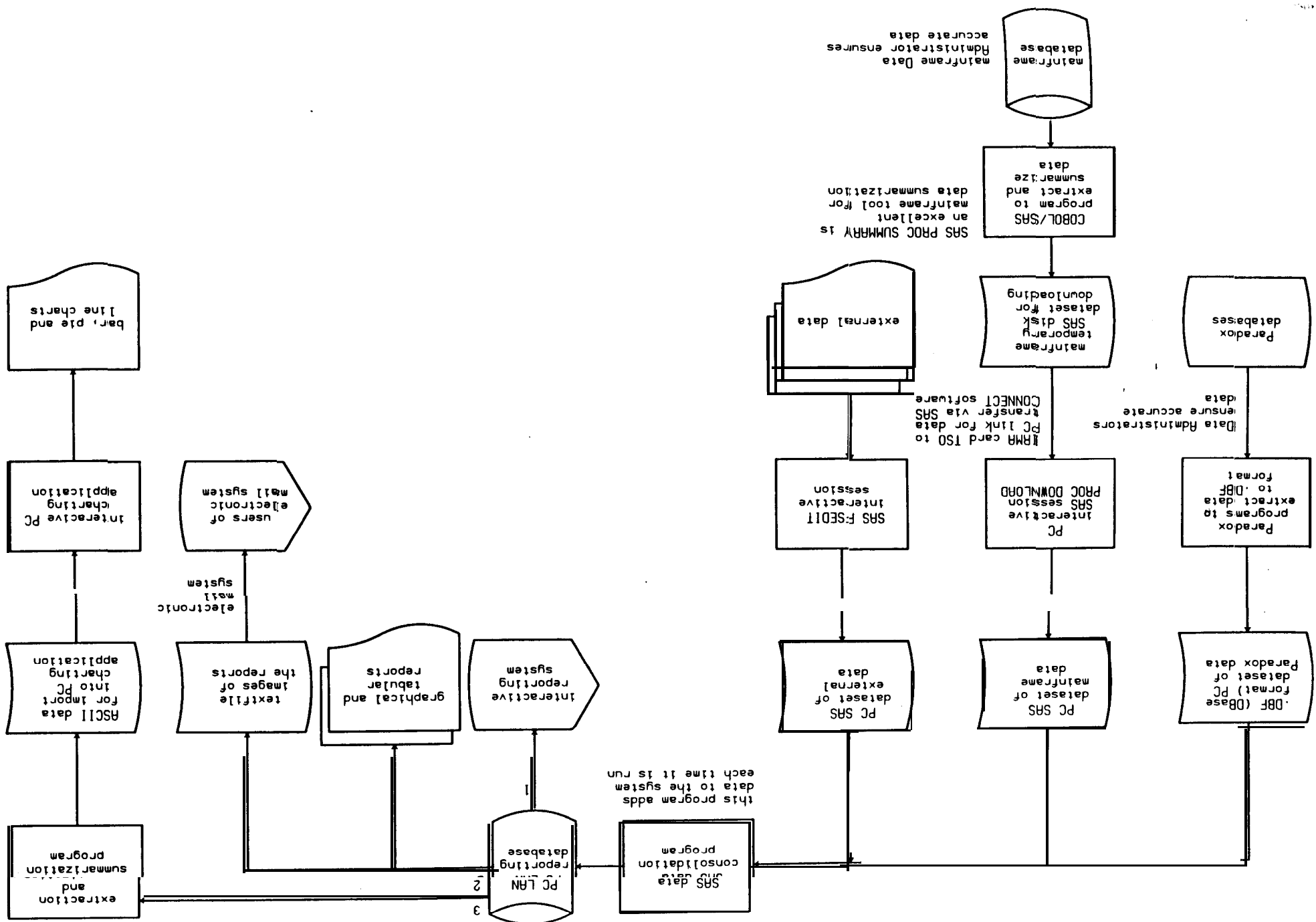
Stuart Readio
President
Justice Information Associates
Boulder, Colorado
303-44-6729

John Moore
Project Monitor
National Institute of Corrections

Appendix 4.

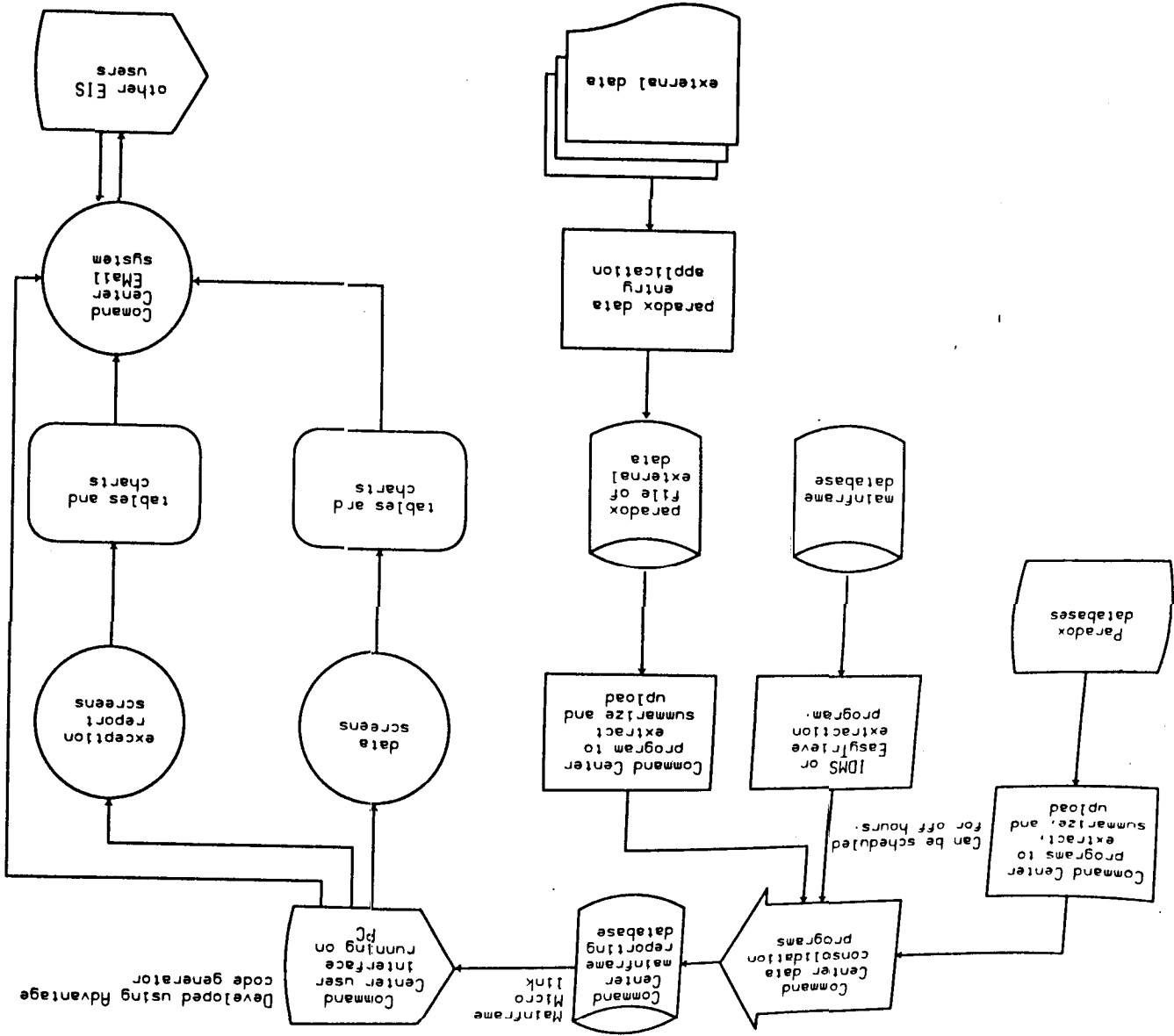
Data Flow

Data Flow of Strategic Planning Information System



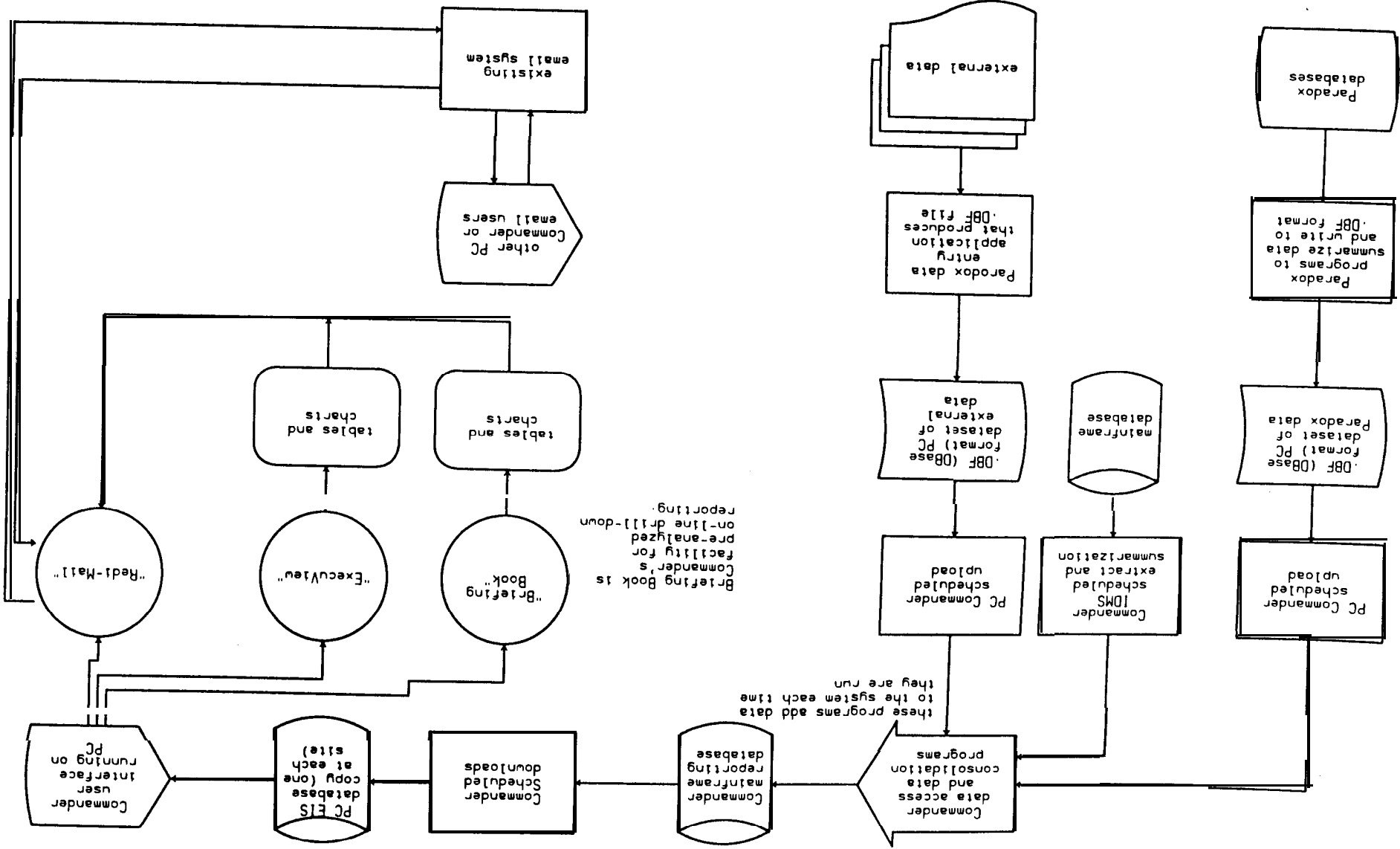
Data Flow of Strategic Planning Information System

Command Center with Advantage/6 Version



Data Flow of Strategic Planning Information System

Commander Version



Correctional Services of Canada

Data Sources

- | | |
|-----------|----------------|
| Financial | Lotus Files |
| Personnel | Vax Data Base |
| Offender | Briefing Notes |
| Security | News Service |

Aggregation and Analysis

2 Data Staff, 3 System Staff

Local Analysis and Graphics

Commander on VAX 4000

4x Day, Daily, Weekly, Bi-Weekly, Monthly, Etc.

User Distribution

Central Office	12 Parole Offices	70 Prisons
VAX "All in One"		

Bureau of Prisons-Key Indicators

